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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (**Canceled**)

2. (**Currently Amended**) A cable modem system as claimed in claim [[1]] 7, wherein all DOCSIS functions are localized in the cable modem engine.

3. (**Original**) A cable modem system as claimed in claim 2, wherein VoIP functionality is embedded in the cable modem engine.

4. (**Currently Amended**) A cable modem system as claimed in claim [[1]] 7, and further comprising an advanced crypto engine configured to perform all crypto functions for both the data networking engine and the cable modem engine, the advanced crypto engine being separate from both the data networking engine and the cable modem engine.

5. (**Canceled**)

6. (**Currently Amended**) A cable modem system as claimed in claim [[5]] 7, wherein the DOCSIS PHY layer includes a hardware transmitter and receiver.

7. (**Currently Amended**) A cable modem system comprising: as claimed in claim 5,
  a data networking engine implemented in a first circuit that includes at least one processor, the data networking engine programmed with software that when executed by the at least one processor of the first circuit causes the data networking engine to

perform home networking functions including interfacing with customer provided equipment, wherein the at least one processor is a RISC processor;

a cable modem engine implemented in a second circuit that includes at least one processor, the second circuit being separate from the first circuit, the cable modem engine including a DOCSIS PHY layer, a DOCSIS controller, and a DOCSIS controller and programmed with software that when executed by the at least one processor of the second circuit causes the cable modem engine to perform cable modem functions other than the home networking functions performed by the data networking engine, the cable modem functions including interfacing with cable media, the cable modem engine configured to enable upgrades to its software in a manner that is independent of upgrades to the software of the data networking engine; and

a data bus that connects the data networking engine to the cable modem engine, wherein the cable modem functions performed by the cable modem engine are completely partitioned from the home networking functions performed by the data networking engine;

wherein the DOCSIS MAC processor is configured to process downstream PDU packets and forward the processed packets directly to the data networking engine without the involvement of the DOCSIS controller in order to boost downstream throughput.

8. (**Currently Amended**) A cable modem system as claimed in claim [[5]] 7, wherein all VoIP functionality is implemented in the DOCSIS controller.

9. (**Original**) A cable modem system as claimed in claim 8, wherein the VoIP functionality is in conformance with the PacketCable specification.

10. (**Currently Amended**) A cable modem system as claimed in claim [[5]] 7, wherein the data networking engine is configured to perform all data networking processing

including advanced multi-port bridging routing with NAT/firewall and VPN, and home networking applications.

11. (**Original**) A cable modem system as claimed in claim 10, wherein the data networking engine comprises the entire embedded portal services functionality of the CableHome specification.

12. (**Currently Amended**) A cable modem system as claimed in claim [[5]] 7, wherein with regard to the cable modem engine includes:

> the DOCSIS PHY layer includes a transmitter and receiver;
> the DOCSIS MAC processor is configured to implement real-time MAC functions for both upstream and downstream communications; and
> the DOCSIS controller is configured to implement VoIP functionality; and wherein the data networking engine includes a RISC processor configured to implement a majority of data networking processing and home networking applications decoupled from the implementation of the MAC functions and the VoIP functionality of the cable modem engine.

13. (**Currently Amended**) A cable modem architecture system as claimed in claim 12, wherein the DOCSIS controller is configured to provide VoIP functionality in accordance with the PacketCable specification, wherein the data networking engine is configured to provide the embedded portal services functionality of the CableHome specification, and wherein the CableHome functionality provided by the data networking engine is completely decoupled from the PacketCable and DOCSIS functionality provided by the cable modem engine.

14. (**Currently Amended**) A cable modem architecture system as claimed in claim 13, wherein the DOCSIS MAC processor is an ARM9TDMI-based RISC processor, and wherein the DOCSIS controller is an ARM940-based RISC processor.

15. (**Currently Amended**) A method of ~~for~~ <u>cable modem operation as claimed in claim</u>
<u>17, further comprising:</u>

     providing a flexible and partitioned cable modem gateway comprising:

          providing data and home networking functionality in the data networking

engine;

          providing DOCSIS and VoIP functionality in the cable modem engine; and

          partitioning the data networking engine from the cable modem engine so

that the data and home networking functionality is completely decoupled from the

DOCSIS and VoIP functionality.

16. (**Currently Amended**) A cable modem system as claimed in claim [[5]] <u>7</u>, wherein

the data networking engine includes consumer provided equipment drivers including a

USB driver and an Ethernet driver and the data networking engine is configured to

provide the embedded portal services functionality of the CableHome specification,

wherein the DOCSIS controller is configured to provide VoIP functionality in accordance

with the PacketCable specification, and wherein the CableHome functionality provided

by the data networking engine is completely decoupled from the PacketCable and

DOCSIS functionality provided by the cable modem engine.

17. (**New**) A method of cable modem operation comprising:

     executing, via at least one processor of a first circuit that implements a data

networking engine, first software that causes the data networking engine to perform

home networking functions including interfacing with customer provided equipment,

wherein the at least one processor is a RISC processor;

     executing, via one or more processors of a second circuit that implements a

cable modem engine programmed with second software, the second software to cause

the cable modem engine to perform cable modem functions other than the home

networking functions performed by the data networking engine, the cable modem

functions including interfacing with cable media, the cable modem engine configured to enable upgrades to its software in a manner that is independent of upgrades to the software of the data networking engine, wherein the second circuit is separate from the first circuit, and wherein the cable modem engine includes a DOCSIS PHY layer, a DOCSIS controller and a DOCSIS controller;

connecting, via a data bus, the data networking engine to the cable modem engine, wherein the cable modem functions performed by the cable modem engine are completely partitioned from the home networking functions performed by the data networking engine;

processing, via the DOCSIS MAC processor, downstream PDU packets and forwarding the processed packets directly to the data networking engine without the involvement of the DOCSIS controller in order to boost downstream throughput.

18. (**New**) A method as claimed in claim 17, further comprising:

providing VoIP functionality in accordance with the PacketCable specification in the DOCSIS controller; and

providing the embedded portal services functionality of the CableHome specification in the data networking engine;

wherein the CableHome functionality provided by the data networking engine is completely decoupled from the PacketCable and DOCSIS functionality provided by the cable modem engine.

19. (**New**) A method as claimed in claim 17, further comprising:

providing the embedded portal services functionality of the CableHome specification in the data networking engine; and

providing VoIP functionality in accordance with the PacketCable specification in the DOCSIS controller;

wherein the data networking engine includes consumer provided equipment drivers including a USB driver and an Ethernet driver; and

wherein the CableHome functionality provided by the data networking engine is completely decoupled from the PacketCable and DOCSIS functionality provided by the cable modem engine.

20. (**New**) A cable modem system comprising:

a data networking engine implemented in a first circuit that includes at least one processor, the data networking engine programmed with software that when executed by the at least one processor of the first circuit causes the data networking engine to perform home networking functions including interfacing with customer provided equipment;

a cable modem engine implemented in a second circuit that includes at least one processor, the second circuit being separate from the first circuit, the cable modem engine programmed with software that when executed by the at least one processor of the second circuit causes the cable modem engine to perform cable modem functions other than the home networking functions performed by the data networking engine, the cable modem functions including interfacing with cable media, and the cable modem engine configured to enable upgrades to its software in a manner that is independent of upgrades to the software of the data networking engine, the cable modem engine including a DOCSIS controller and a DOCSIS MAC processor, the DOCSIS MAC processor configured to process downstream PDU packets and forward the processed packets directly to the data networking engine without the involvement of the DOCSIS controller in order to boost downstream throughput; and

a data bus that connects the data networking engine to the cable modem engine, wherein the cable modem functions performed by the cable modem engine are completely partitioned from the home networking functions performed by the data networking engine.

21. (**New**) A cable modem system as claimed in claim 20, wherein all DOCSIS functions are localized in the cable modem engine.

22. **(New)** The cable modem system as claimed in claim 20 wherein the DOCSIS MAC processor is configured to implement real-time MAC functions for both upstream and downstream communications.